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142 To casual observation the Ona impress one by their great height, their barrel-like chests, their splendidly upstanding carriage, and their patent strength and endurance (figs. 7 and 37). Their hair grows abundantly on the head, but sparsely on the face and body, from which in the old days they plucked it with a pair of mussel-shells. Their feet, ankles, hands, and wrists are surprisingly delicate in proportion to their great stature. A peculiar physical characteristic which has escaped comment is the not infrequent presence of purple-black patches like birthmarks on the skin. These may appear on any part of the body, but are especially common on the base of the neck, where an example was noted among the Yahgan. As the Indians are sensitive about such nævi, examination is difficult.

FIG. 5.—Yahgan Indians. (After Hyades and Deniker.)

141 In sharp contrast to the Ona the Yahgan are exceedingly short. Their stature approximates closely that of the Alacaluf, among whom Hyades (1891, p. 120) found an average of 157.4 for eleven men and 148.8 for six women. All visitors to Tierra del 142 Fuego have commented on the corpulence of the Yahgan in relation to their slender legs, a characteristic attributed to long hours spent

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in the cramped positions compulsory in their canoes. The eastern Yahgan, it is asserted, had better developed legs than the other groups because they hunted more frequently on shore. Like the Ona, the Yahgan had little hair on their faces and removed this growth with mussel-shell pincers. It is stated [1] that on the arrival of the French scientific expedition in 1883 the Yahgan mistook the beards of the Frenchmen for tobacco, and in that belief tried to pull them off.

We should also mention a curious Yahgan anomaly noted by Hyades and Deniker (1891, p. 161) that these Indians tended to put on fat with unusual rapidity in times of plenty, and were able to live on this reserve when food was scarce. Yahgans of age before the white settlement resulted in a less erratic food supply exhibited skin hanging in folds on underfed individuals (fig. 5). The ability to store unusual amounts of fat, most developed in modern races among the Hottentot, has been thought a survival of a hibernating stage in the development of man. Its existence in Paleolithic Europe is deduced from steatopygous figurines among the most ancient carvings produced by human hands. Anatomically, Hyades and Deniker explain this feature by long intestines coupled with a small stomach, leading to rapid and frequent digestion of small amounts of food. The Yahgan stomach was found to contain 1800 cc. as against 3700 cc. for Europeans, presumably Frenchmen, while the Yahgan intestines were six times the length of the body as compared with five times the length of the body in Europeans. These observations and conclusions, it may be mentioned, are not in accord with more recent investigations which reveal a correlation between long intestines and a vegetal diet.

We can say little about the physique of Haush and Alacaluf, the former clearly were related to the Ona, while the latter were short in stature like the Yahgan.

Turning to more exact data, in the accompanying table we give statistical constants for the Ona and the Yahgan, based on all available material. For the preparation of this table I am indebted to Prof. E. A. Hooton of Harvard University, to Mr. Walter Cline, and to Miss Barbara Clark. I am further indebted to Professor Hooton for the subjoined comment.

[1] Capt. Le Clerk in the *South American Missionary Magazine*, 1884, p. 58.

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TABLE III.—STATISTICAL CONSTANTS FOR THE ONA AND THE YAHGAN

		Number of Cases	Mean	Standard Deviation	Coefficient of Variation	Range
Stature						
Ona	Adult Males	25	175.44 ± .66	4.71 ± .45	2.68 ± .26	168–186
Yahgan	" "	67	158.10 ± .43	5.23 ± .30	3.31 ± .19	146–169
Ona	Adult Females	34	159.26 ± .58	5.02 ± .41	3.13 ± .26	149–169
Yahgan	" "	56	147.54 ± .34	3.82 ± .24	2.59 ± .17	141–157
Head Length						
Ona	Adult Males	22	198.77 ± .51	3.57 ± .36	1.80 ± .18	193–205
Yahgan	" "	27	190.04 ± .87	6.72 ± .62	3.54 ± .32	175–207
Ona	Adult Females	30	190.37 ± .60	4.86 ± .42	2.55 ± .22	182–200
Yahgan	" "	26	180.38 ± .74	5.59 ± .52	3.10 ± .29	168–193
Head Breadth						
Ona	Adult Males	22	138.91 ± .48	3.31 ± .34	2.09 ± .21	132–144
Yahgan	" "	27	130.78 ± .64	4.95 ± .45	3.79 ± .30	145–163
Ona	Adult Females	30	133.30 ± .62	5.06 ± .44	3.80 ± .29	142–163
Yahgan	" "	26	142.66 ± .35	2.63 ± .25	1.85 ± .17	138–147
Length-breadth of head						
Ona	Adult Males	22	80.06 ± .32	2.20 ± .22	2.75 ± .28	77–85
Yahgan	" "	26	79.27 ± .37	2.78 ± .26	3.51 ± .33	74–88
Ona	Adult Females	30	80.57 ± .34	2.77 ± .24	3.43 ± .30	74–86
Yahgan	" "	26	79.04 ± .34	2.56 ± .24	3.24 ± .03	73–84
Nasal Index						
Ona	Adult Males	22	71.18 ± 1.00	6.93 ± .70	9.73 ± .99	58–84
Ona	Adult Females	30	70.30 ± .79	6.45 ± .56	9.17 ± .80	60–87
Facial Index						
Ona	Adult Males	20	85.50 ± .75	4.95 ± .53	5.78 ± .62	78–97
Ona	Adult Females	30	85.80 ± .53	4.30 ± .37	5.01 ± .44	75–91

NOTE ON THE ANTHROPOMETRIC CHARACTERS OF THE YAHGAN AND THE ONA

By Prof. E. A. Hooton

The statistical constants in the accompanying table are derived from the data of Lehmann-Nitsche and Gusinde in the case of the Ona, and from the data of Hyades and Deniker, Bove, and Hahn in the case of the Yahgan.

The difference in size between these adjacent tribes, both of which live almost exclusively on animal food, is prodigious. Twenty-five adult male Ona yield a mean stature of 175.44 cm., which is

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probably the highest to be found among American Indians. It is, of course, possible that the neighboring Patagonians equal this figure. On the other hand the stature of 67 adult male Yahgans is only 158.10, which ranks them among the shortest of American Indian groups. Even more remarkable than the means are the standard deviations and coefficients of variation for stature. In a series of 540 full-blood Sioux, Sullivan[1] found a standard deviation of 5.64 cm. and a coefficient of variation of 3.27 per cent. The corresponding figures are somewhat lower in the Yahgan and significantly lower in the Ona. Davenport[2] lists the standard deviations of stature for eight samples of males of military age of various nationalities. All of these standard deviations exceed 6 cm. It is then apparent that the variability of the Fuegians in stature is low.

It may also be observed from the table that the variabilities of the short Yahgan with respect to stature are somewhat higher than those of the tall Ona. The reverse is true however in the female series.

The head lengths of both groups show similar statistical features. The mean of the dimension for Ona males, 198.77 mm., is the largest known to the present writer, and the variability of this measurement is wonderfully small. The Yahgan too have long heads, but are much more variable than the Ona in this respect. Similar observations apply to the head breadth.

The means of the cephalic indices indicate a predominance of mesocephaly in both groups. The Ona show slightly higher means than the Yahgan. Here again variabilities are extraordinarily low. The Ona range in males is from 77 to 85, and the Yahgan from 74 to 88. In case of the females the ranges are: Ona 74–86; Yahgan 73–84. The variabilities of the female groups with respect to this index do not differ significantly.

Data for the nasal and total facial indices are available only for the Ona series. In both of these cases the standard deviations and variabilities are rather large. All varieties of nasal and facial proportions occur. One expects, however, to find a large measure of variability in both of these indices; first, because of the extreme difficulty in locating the nasion point from which both nasal height

[1] L. R. Sullivan, Anthropometry of the Siouan Tribes, *Proc. Nat. Acad. Sci.*, vi, no. 3, pp. 131–134, Mar. 1920.

[2] Charles B. Davenport and Albert G. Love, *Army Anthropology*, p. 113, 1921. *The Medical Department of the U. S. Army in the World War*, xv, Statistics, pt. I.

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and facial height are measured; second, because of age changes in the individual which affect these parts. The length of the nose increases with age and the length of the face tends to diminish with wear and loss of teeth. Nevertheless it would appear that these indices in the Ona group by their dispersion indicate a lack of homogeneity of the group when compared with the measurements and indices previously considered.

It is proposed to consider here the problem of Ona and Yahgan anthropometry only so far as deductions may be made from the accompanying table and from information as to the environmental factors which seem to be important. First of all it is apparent that the Yahgan as a group are less homogeneous than the Ona, particularly in the case of the males. How may this difference in variability be explained? The conditions of diet, occupation, climate, etc., are somewhat different from those obtaining in the case of the Ona, but presumably quite uniform for the entire Yahgan group. Indeed it would appear that the life of the Ona is much more varied than that of the adjoining tribe. The Yahgan are canoe people, but it does not seem probable that their life in boats and on the shore would tend to diversify them in physical type any more than the roaming life of the Ona. I think we must admit that the Yahgan owe their greater variability probably to the presence of more diverse physical types of an hereditary character than are found among the Ona. By this I mean that two or three, or more perhaps, of the various elements which have blended to form the composite "Indian" race in America, are found among the Yahgan, whereas in the Ona we have to deal either with a single type or with a group in which one single type overwhelmingly predominates.

In a "refuge" area one may expect to find all sorts of samples of the weaker and more primitive populations which have, from time to time, inhabited the continent. These odds-and-ends are likely to have been reduced to a certain homogeneity through isolation which brings about interbreeding and through selection. Both of these factors are notably operative in Tierra del Fuego. I think that it is an assumption justified by the evidence that the earliest inhabitants of the New World were short dolichocephals and that these were followed by short brachycephals. Among the Yahgan we have a fusion of two such elements, just as we have, to cite another instance, in Pueblo peoples of southwestern United States.